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GEOGRAPHICAL NOTES.

BY

GEO. C. HURLBUT, *Librarian.*

AN INTERNATIONAL GEOGRAPHICAL CONFERENCE.—
The *Comptes Rendus* of the Paris Société de Géographie, No. 11, p. 246, has the following announcement :*

“The *National Geographic Society* of Washington sends notice of the International Conference on Geographical Sciences, organized by itself, in concert with the *American Geographical Society* of New York, on occasion of the Chicago Exposition. This Conference will take place in the Columbus Hall of the Institute of Arts, at Chicago, on the 27th of July next. The members of the Geographical Society (of Paris) who are in Chicago at that time are invited to be present (at the Conference).”

So far as the American Geographical Society is concerned, the announcement in the *Comptes Rendus* is absolutely incorrect. This Society is in no way responsible for the International Conference on Geographical Sciences to be held at Chicago.

*La *National Geographic Society* de Washington fait part de la Conférence internationale pour les sciences géographiques qu'elle a, de concert avec l'*American Geographical Society* de New York, organisée à l'occasion de l' Exposition de Chicago. Cette Conférence aura lieu dans le Columbus Hall de l' Institut des Arts, à Chicago, le 27 juillet prochain. Les membres de la Société de Géographie (de Paris) qui se trouveront à Chicago à cette époque sont invités à y assister.

The Council of the Society positively declined to take part in the proposed Conference, for the sufficient reason that the Congress assembled at Berne in the year 1891 had decided that the next International Congress on Geographical Sciences should meet in London, at a time to be determined by the Royal Geographical Society; and the Council felt bound to respect this decision.

TOSCANELLI.—Under this title Mr. G. Uzielli brought out at Florence in January last the first number of a publication intended to illustrate the geographical, historical, artistic and literary relations of Italy and America, and to strengthen the ties between the New Continent and "*the country to which it owes its discovery.*"

Especial attention will be paid to the documents relating to the age of discovery and the ancient history of America, to be found in the Italian archives and libraries.

Toscanelli is written in French, and the numbers will appear at irregular intervals.

In his brief address to the reader Mr. Uzielli divides the glory of the discovery between Paolo dal Pozzo Toscanelli and Christopher Columbus. "It would be as difficult," he says, "to give the first place to the one or to the other of these two great men, as to establish a parallel between the head and the arm, between Louvois and Turenne, between Pitt and Wellington, between Bismarck and Moltke."

This is a matter of appreciation. Bismarck will do very well for a head, but the reader must be amazed

when he is asked to regard Turenne and Wellington as no more than the arms of Louvois and Pitt; to say nothing of the chronology.

Mr. Uzielli seems to have looked too long and too lovingly at one figure,* and to have lost the sense of proportion. Toscanelli was undoubtedly a great man, but it may be affirmed, with or without the evidence of the twenty years' researches, that he does not divide with Columbus the glory of the discovery.

Mr. Uzielli speaks of impartiality,† but the tone of his address to the reader is exclusively Italian. According to him the discovery of America was the work of Italy, and of Italy alone; for he does not mention the name of Spain. It is easy to believe that even the measure of renown accorded to Columbus is given, not to the man, but to the Italian; so far does patriotism appear to prevail over Mr. Uzielli's respect for the truth of history.

The articles in this first number of the new magazine are full of interest.

Several relate to Toscanelli; others to Columbus and to Vespucci.

Among these last are notices of some of Vespucci's manuscripts, hitherto unknown or overlooked. One of these is a volume of exercises in Italian and Latin, composed, as Mr. Uzielli thinks, between the years 1480 and 1490. Three pages of this MS. are given in facsimile.

* He says, in foot note No. 3 on p. 3, that he has devoted twenty years to his researches on Toscanelli.

† Notre but étant surtout de recueillir des faits, et non de faire des appréciations, nous accueillerons de préférence dans le "TOSCANELLI" les articles ayant des pièces à l' appui et les critiques faites avec une méthode impartiale et positive, — *Toscanelli*, p. 2.

It was Mr. Uzielli himself who discovered the origin of the other MSS. These are the letters of Guidantonio Vespucci, Florentine ambassador to France, written in 1478-1480, when Amerigo was attached to the embassy. Mr. Uzielli, struck with the resemblance between the handwriting of these despatches and that of Vespucci's book of exercises, called in the best palæographers, and is supported by them in his conclusion that the letters were written, and probably composed, by Amerigo ; though the handwriting does not always imply the composition of a paper.

In another article Mr. Uzielli defends, with his well-known learning and ingenuity, the authenticity of Piero Vaglienti's manuscript relation of the voyages of Vespucci.

A document, to which some importance is attached, is Verino's Latin poem, supposed to have been written in 1482 in honor of Toscanelli, who died early in that year. The poet declares that Toscanelli ought to have lived forever, that such a philosopher rarely appeared upon earth, that he was Pythagoras and Hippocrates and Ptolemy, that he was an angel for purity of life, and that his fame will increase to the end of time. Rhapsodies like this are common enough in literature, but Mr. Uzielli takes Verino seriously, and adds a commentary with notes, one of which is a curiosity :

" In order to avoid other explanations, I apprise the reader that I profess a kind of agnosticism which differs little from that of Darwin." *

This bit of autobiography may be useful to some future Verino.

* Pour éviter d'autres explications, je préviens le lecteur que je professé un genre d'agnosticisme qui diffère peu de celui de Darwin.—*Toscanelli*, p. 17, note 2.

Attention is called, on page 40, to the lack of special works and collections of books in the public libraries of Florence. Among the deficiencies are the atlases of Jomard, Santarem, Kunstmann, Fischer and Kretschmer, the collections of the Hakluyt Society, the Schéfer-Cordier *Recueil*, Navarrete, Las Casas, many of Harrisse's writings, Yule's *Marco Polo*, and others.

On the same page Mr. Uzielli prints the following exact list of the Parts and Volumes, which make up the great Italian collection of documents relating to Columbus, now in course of publication, with the names of the scholars charged with the preparation of the work :

First Part (3 volumes).

CESARE DE LOLLIS, *A Complete Collection in chronological order of the known writings of Christopher Columbus.*

Two volumes of text, and one volume containing the heliotype reproduction of the writings of Christopher Columbus with the transcription on the opposite page.

Second Part (3 volumes).

LUIGI TOMMASO BELGRANO and MARCELLO STAGLIENO, *Private Documents of Christopher Columbus and his family (1 vol.).*

Official Documents, relating to Christopher Columbus, published from the MS. in the Archives of the Ministry for Foreign Affairs at Paris, with variants from those in the Genoese Archives (1 vol.).

CORNELIO DE' SIMONI, *Columbian Questions*—ALBERTO SALVAGNINI, *Christopher Columbus and the Co-*

lombo Corsairs in the XV. Century—ACHILLE NERI, *The Portraits of Christopher Columbus*—UMBERTO ROSSI, *The Medals of Christopher Columbus* (1 vol.).

Third Part (2 volumes).

GUGLIELMO BERCHEI, *Italian Sources for the Discovery of the New World*—*Preface and Official Documents* (1 vol.)—*Contemporary Narratives* (1 vol.).

Fourth Part (2 volumes).

ENRICO ALBERTO DE ALBERTIS, *The Art of Navigation in the time of Christopher Columbus* (1 vol.). P. TIMOTEO BERTELLI, *Magnetic Declination and its Variation in the Space discovered by Christopher Columbus*. VINCENZO BELLIO, *Ancient Geographical Charts relating to America which are found in Italy*: with heliotype reproduction of the most important among them.

Fifth Part (3 volumes).

GIOVANNI CELORIA and GUSTAVO UZIELLI, *Paolo dal Pozzo Toscanelli, Florentine astronomer and geographer of the XV. Century (1397-1482)*, 1 vol. with maps—GIUSEPPE PENNESI, *Peter Martyr of Anghiera*. PROSPERO PERAGALLO, *Leone Pancaldo*. LUIGI HUGUES, *Amerigo Vespucci, Giovanni da Verrazzano and Battista Genovese*. VINCENZO BELLEMO, *John Cabot*—ANDREA DA MOSTO, *Antonio Pigafetta, with the reproduction of the MS. in the Ambrosian Library at Milan with its drawings*—MARIO ALLEGRI, *Girolamo Benzone* (2 vols.).

Sixth Part (1 volume.)

GIUSEPPE FUMAGALLA, with the assistance of PIETRO AMAT DI SAN FILIPPO, *Italian Bibliography of printed works relating to Christopher Columbus and the Discovery of America.*

THE HODGKINS FUND.—The Smithsonian Institution has issued the following circular concerning the Hodgkins Fund Prizes :

In October, 1891, Mr. Thomas George Hodgkins, of Setauket, New York, made a donation to the Smithsonian Institution, the income from a part of which was to be devoted "to the increase and diffusion of more exact knowledge in regard to the nature and properties of atmospheric air in connection with the welfare of man." The Smithsonian Institution now announces the following prizes to be awarded if satisfactory papers be offered in competition :—1. A prize of \$10,000 for a treatise embodying some new and important discovery in regard to the nature or properties of atmospheric air. These properties may be considered in their bearing upon any or all of the sciences—*e.g.*, not only in regard to meteorology, but in connection with hygiene, or with any department whatever of biological or physical knowledge. 2. A prize of \$2000 for the most satisfactory essay upon—(a) The known properties of atmospheric air considered in their relationships to research in every department of natural science, and the importance of a study of the atmosphere considered in view of these relationships. (b) The proper direction of future research in connection with the imperfections of our knowledge of atmospheric air, and of the connections of that knowledge with other sciences. The essay, as a whole, should tend to indicate the path best calculated to lead to worthy results in connection with the future administration of the Hodgkins foundation. 3. A prize of \$1000 for the best popular treatise upon atmospheric air, its properties and relationships (including those to hygiene, physical and mental). This essay need not exceed 20,000 words in length; it should be written in simple language and be suitable for publication for popular instruction. 4. A medal will be established, under the name of the Hodgkins Medal of the Smithsonian Institution, which will be awarded annually or biennially, for important contributions to our knowledge of the nature and properties of atmospheric air, or for practical applications of our existing knowledge of them to the welfare of mankind. This medal will be of gold, and will be accompanied by a duplicate impression in silver or bronze. The treatises may be written in English, French, German, or Italian, and should be sent to the secretary of the Smithsonian Institution, Washington, before July 1, 1894, except those in competition for the first prize, the sending of which may be delayed until December 31, 1894.

The papers will be examined, and prizes awarded, by a committee to be ap-

pointed as follows: one member by the Secretary of the Smithsonian Institution, one member by the president of the National Academy of Sciences, one by the president, *pro tempore*, of the American Association for the Advancement of Science; and the committee will act together with the secretary of the Smithsonian Institution as member, *ex-officio*.

The right is reserved to award no prize if, in the judgment of the committee, no contribution is offered of sufficient merit to warrant an award.

An advisory committee of not more than three European men of science may be added at the discretion of the Committee of Award.

If no disposition be made of the first prize at the time now announced, the Institution may continue it until a later date, should it be made evident that important investigations relative to its object are in progress, the results of which it is intended to offer in competition for the prize. The Smithsonian Institution reserves the right to limit or modify the conditions for this prize after December 1, 1894, should it be found necessary. Should any of the minor prizes not be awarded to papers sent in before July 1, 1894, the said prizes will be withdrawn from competition.

A principal motive for offering these prizes is to call attention to the Hodgkins Fund, and the purposes for which it exists, and accordingly this circular is sent to the principal universities, and to all learned societies known to the Institution, as well as to representative men of science in every nation. Suggestions and recommendations in regard to the most effective application of this fund are invited.

It is probable that special grants of money may be made to specialists engaged in original investigation upon atmospheric air and its properties. Applications for grants of this nature should have the endorsement of some recognized academy of sciences or other institutions of learning, and should be accompanied by evidences of the capacity of the applicant in the form of at least one memoir already published by him, based upon original investigation.

To prevent misapprehension of the founder's wishes, it is repeated that the discoveries or applications, proper to be brought to the consideration of the Committee of Award, may be in the field of any science or any art, without restriction; provided only that they have to do with "the nature and properties of atmospheric air in connection with the welfare of man."

Information of any kind desired by persons intending to become competitors will be furnished on application.

All communications in regard to the Hodgkins Fund, the Hodgkins Prizes, the Hodgkins Medals, and the Hodgkins Fund Publications, or applications for grants of money, should be addressed to S. P. Langley, Secretary of the Smithsonian Institution, Washington, U. S. A.

WASHINGTON March 31, 1893.

THE MOVEMENTS OF OUR POPULATION.—In a paper contributed to the *National Geographic Magazine*, Vol. V., pp. 21-44, and illustrated with plates and

tables, Mr. Henry Gannett analyzes the Census returns of the United States from 1790 to 1890, and presents many interesting facts. The first table shows the population at each successive decade, with the rate of increase.

In 1790 the people numbered 3,929,214; in 1890 they were 62,622,250. The highest rate of increase was for the ten years ending with 1810, 36.38 per cent.; the lowest for the period 1860-1870, 22.66 per cent. For the decade ending with 1880 the increase was 30.07 per cent., but it fell in the next ten years to 24.85 per cent.

In 1790 the area of the country was 827,844 square miles, and the density of population was 4.75 to the square mile. In 1890 the area had increased to 3,603,884 square miles, and the density to 17.37. In southern New England the density is as great as in some of the European countries, Rhode Island having 318 to the square mile, and Massachusetts 278.

The Census classes as "Urban Population" the inhabitants of all cities of 8,000, or more. A century ago these cities were six in number, and the urban population was one thirty-third of the entire population. To-day the cities of 8,000 inhabitants, or more, number 443, and they contain 29 per cent. of the population. The increase in the cities has been greater during the past decade than at any previous time.

The average size of families has diminished continuously from 5.55 in 1850 to 4.93 in 1890. The largest families are in the South, the smallest in New England and the frontier states.

As regards race, the population is composed of about

55,000,000 whites, 7,500,000 Africans and mixed bloods, 150,000 Chinese and Japanese, and a few hundred thousand Indians. In 1790 the colored race formed one-fifth of the population ; in 1890 the proportion had fallen to less than one-eighth. The rate of increase of this race has apparently surpassed that of the whites in the two decades, 1800-1810 and 1870-1880 ; in every other it was inferior, and in 1890 the percentages were: White, 26.68 ; Colored, 13.11.

The immigration from Europe began to be of importance in the decade 1830-1840, when it amounted to 599,125 ; for the next ten years it was 1,713,251 ; then, for the next four decades, successively, 2,598,214, 2,314, 824, 2,812,191, and 5,246,613. These totals include the arrivals from Canada.

Of the entire number, 4,504,128 are Germans, 5,911,-454 natives of the United Kingdom (3,481,074 Irish), and 1,067,548 Scandinavians. Other nationalities are represented by smaller numbers.

In 1890 the native white population numbered 45,863,008 ; the foreign born 9,248,547. All the foreign born are in the States north of Mason and Dixon's line and in the Western States and Territories ; the Southern States having received practically no European immigration. Adding to those of foreign birth the number of those born of foreign parents, Mr. Gannett estimates the foreign element of the white population at 25,000,000.

This element constitutes 45 per cent. of the inhabitants in the Northern States east of the plains. In Massachusetts and New York it amounts to 56 per cent., in Connecticut to 50, and in Rhode Island to 58 per

cent., while in Wisconsin and Minnesota those of foreign blood amount to three-fourths, and in North Dakota to four-fifths of the population.

In the large cities the foreigners preponderate. In Boston they constitute 70 per cent, in Brooklyn 72, in New York 82, in Buffalo 78, in Chicago 80, in Detroit 79 and in Milwaukee 87 per cent.

The whites of native extraction are estimated at 30,000,000, those of foreign extraction at 25,000,000, and the colored at 7,500,000.

Mr. Gannett does not seem to regard these figures with satisfaction; but he comforts himself with the reflection that 10,500,000 of the foreign whites, being of British and Irish origin, may be added to the natives to secure for some time the predominance of the British blood.

THE GEOGRAPHICAL CLUB OF PHILADELPHIA.—The *Bulletin* of this Club, Vol. 1, No. 1, dated January, 1893, is devoted to a handsomely illustrated paper on Mountain Exploration by Edwin Swift Balch.

Mr. Balch has done a great deal of mountaineering and has read much on the subject, and, like an enthusiast, he magnifies his office. Mountaineering, he says, belongs rather to the field of geographical exploration, and climbing proper is only a branch of it. If, as Boileau affirms, it requires time and taste to write a poem, it is a matter of time and practice to make a good mountaineer. The best way is, according to Mr. Balch, to do a great many small climbs at first without a guide, so as to acquire proficiency, and occasionally to take a climb with a good guide in order to study his methods.

An important rule, too often forgotten, is to learn to walk very slowly and very steadily.

Mr. Balch's essay is entertaining and instructive, but it would have been improved by revision. There is a bad slip on p. 11:

"All the Caucasus Mountains, a range almost as large as Switzerland," etc.

The range of the Caucasus covers an area nearly four times the size of Switzerland.

Much worse than an error in superficial measurement is the following remark, on p. 5:

"To the great mountain of Nepal he affixes the name of a little Indian surveyor, 'Everest,'" etc.

The reader of this feels some curiosity to know what manner of man he may be, who looks down on Sir George Everest as a little surveyor.

DOMESTIC REINDEER IN ALASKA.—Dr. Sheldon Jackson's report to Commissioner Harris, of the Bureau of Education, on the introduction of domestic reindeer into Alaska, has been issued by the Government as Senate Mis. Doc. No. 22, 52d Congress, 2d Session.

Sixteen reindeer were purchased in Siberia in 1891, and left on Amakuak and Unalaska Islands where they were found in good condition the next year, with an addition of two to their number. In 1892, five trips were made to Siberia and 175 reindeer were successfully landed at Port Clarence, the nearest good harbor on the American side. Reconnoissances previously made had proved that there was abundance of moss for pasturage in the neighborhood of the station at this place, where a house was built for the superintendent and his assistant. Four Siberians, acquainted with

the management of the reindeer, were placed in charge of the herd, and a number of Alaskan Eskimo were apprenticed to them. The expectation is that each Eskimo, as he learns the business, may be started in life with a small herd of his own, and that in this way the country may gradually be peopled with a hardy race, now threatened with extinction.

According to Dr. Jackson, these Eskimo are superior to those of Greenland and Labrador. He says that on the great rivers emptying into the Arctic they are a large race, and that at Kotzebue Sound he has met men and women six feet in height. The physical strength of the women is prodigious. We are told of one who walked off with a box of lead weighing 280 pounds; and of another who lifted into her birch-bark canoe a stone that weighed 800 pounds. If the birch-bark canoe had been less fragile, the stone might have weighed 1600 pounds, for the air of the North expands the mind as well as the muscles.

Dr. Jackson informs us that

Arctic and subarctic Alaska cover an empire in extent equal to nearly all Europe.

The best authorities estimate the area of Alaska at 600,000 square miles, and that of Europe at nearly 3,800,000.

Dr. Jackson, who is General Agent of Education in Alaska, does not know the size of Europe, but he must know that the great outlying territory, in which he works, covers about one-sixth of the surface of the United States. Does he really believe that the area of the United States is twice as great as that of all North America?

COSTA-RICA AT THE MADRID EXHIBITION, 1892.*—The Historical-American Exhibition at Madrid, in the autumn of 1892, was remarkable for the wealth of its collections illustrating in every way the life of the American races before the Conquest.

This *catalogue raisonné*, prepared by Messrs. Peralta and Alfaro, describes a great number of objects in gold, stone and pottery, native arms and utensils, specimens of birds, fossils, etc., from the National Museum of Costa-Rica and the cabinets of private collectors.

In the Introduction, which has also been issued as a separate publication,† Mr. Peralta sketches the physical features of Costa Rica, and the condition of the natives, passing rapidly towards extinction in spite of the efforts made to improve their lot. The Guatusos, who inhabit the neighborhood of Lake Nicaragua and the river San Juan, make a miserable living by hunting and fishing, and raise Indian corn and plantains in a small way. The Talamancas, the Térrabas and the Borucas occupy the Atlantic and Pacific slopes of the mountains on the Colombian frontier. Besides these natives, who number altogether less than twenty thousand, there are in the interior settlements a few scanty remnants of the pre-Columbian races, almost without tradition of their forefathers, and almost totally ignorant of their arts and industries.

* Etnología Centro-Americanana—Catálogo Razonado de los Objetos Arqueológicos de la República de Costa-Rica en la Exposición Histórico-Americanana de Madrid—1892, por D. Manuel M. de Peralta y D. Anastasio Alfaro.

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Madrid, 1893.

† Etnología Centro-Americanana—Apuntes para un libro sobre los Aborígenes de Costa Rica por Manuel M. de Peralta. 8vo. Madrid, 1893.

At the time of the Conquest the principal tribes that occupied the territory of Costa Rica were the Náhuas (Aztecs) and Mangues (Chorotegas), Güetares, Viceitas, Térrabas, Changüenes, Guaymíes, Quepos, Cotos, and Borucas. The Náhuas, at least, came from the north ; the Mangues had their settlements on the shores of the lakes Nicaragua and Managua, and extended to the southern parts of Mexico, where their language was still spoken at Acalá a few years ago. Mr. Peralta does not attempt to determine the ethnic affinities of the Güetares, though it seems certain that they underwent the Mexican influence.

That they were not entirely savage, is sufficiently established by their work in gold ornaments, and artistically worked stones discovered at Aguacaliente and Turrialba, and they were honorably distinguished from their neighbors in the north, and from the Chorotegas, by the fact that they did not practise cannibalism.

There are marked affinities between the Guaymíes, Térrabas, Changüenes, and Borucas, and the most eastern tribes of the Isthmus.

These peoples of Costa Rica, now so feebly represented, are believed to have numbered a hundred thousand souls in the year 1564.

The Náhuas and Mangues in the Nicoya district have completely disappeared.

Mr. Peralta's thorough knowledge of his subject enables him to correct errors in ethnography and geography, made by Latham and Pimentel.

THE ROYAL GEOGRAPHICAL SOCIETY'S AWARDS.—
At the Annual Meeting of the Royal Geographical

Society, held on the 29th of May, the Founder's Gold Medal was presented to Frederick Courtney Selous, for his explorations in British South Africa ; and the Patron's Gold Medal to W. Woodville Rockhill, for his travels and explorations in Western China, the Koko Nor region and Tibet.

Mr. R. W. Senior received the Murchison Grant, in recognition of his laborious surveys continued for several years in the Punjab Himalayas ; Mr. Henry O. Forbes, the Gill Memorial for his work of exploration in New Guinea, the Malay Archipelago and the Chatham Islands ; and to Mr. Charles Hose was awarded the Cuthbert Peek Grant, for observations and explorations in Sarawak, Borneo.

ADMISSION OF LADIES TO THE ROYAL GEOGRAPHICAL SOCIETY.—The Annual Meeting of the Royal Geographical Society, held May 29, and fully reported in the London *Times*, was of unusual interest.

The report of the Council was taken as read, and its adoption was moved, when a Fellow arose to ask the meaning of the following passage :

“ Membership.—The question of electing ladies as ordinary fellows was considered by a special general meeting on April 24, when it was decided in the negative by a considerable majority. The council regard this vote (unless hereafter rescinded by a general meeting) as conclusive against any further election of ladies as ordinary fellows, without prejudice to the *status* of those already elected.”

He moved that the words from *without* to *elected* be omitted. The President ruled against the power to make this motion, and the Fellow then moved the rejection of the report. The motion was put and lost, and the report was adopted by a vote of 237 ayes to 144 noes.

After the presentation of medals and prizes, and the delivery of the President's Annual Address,

The Earl of Mayo desired to move that the vote of April 24 be rescinded, or, to put it in another form, that the council should continue to elect ladies as they had done before. They had already elected 22, and in the president's own words they wanted them and a great many more. He hoped the resolution would be passed on the ground that a great many other learned societies in England and Scotland had ladies for their members, and he did not see why the Royal Geographical Society should not follow their example. He moved:—"That the council be requested to elect more ladies as Fellows." The question as to the limit in the number to be so elected was a matter of detail.

It was moved after discussion, that the question be postponed; when

The Earl of Northbrook said that, having lately had the honor of being president of the Royal Asiatic Society, which considered itself far more important than the Royal Geographical Society, dealing as it did with the ancient languages of the world and requiring great knowledge and skill on the part of its members, he desired to say that the Royal Asiatic Society willingly and readily, and with great satisfaction elected ladies. Not only so, but the society was served by a very learned and able lady as assistant secretary. When he had the honor of being the president of the Royal Asiatic Society, ladies read most able papers before it, and he most heartily supported the proposal that ladies should be elected as Fellows of the Royal Geographical Society.

He was followed by

Sir John Lubbock who, as president of the Anthropological Society, said that the presence of ladies had not in any way detracted from the usefulness of his society.

General Strachey spoke to the same effect. He considered it most desirable that ladies should be admitted as members of the society, and in asking them to postpone their decision on the subject he did so to show that it was not desired in any way to act tyrannically or unfairly. So far as they had any means of judging, the general feeling of the Fellows was in favor of the action of the council in permitting the election of ladies.

Sir William Flower agreed with the two last speakers in asking Lord Mayo to postpone his motion. He remembered the time, 40 years ago, when ladies were not admitted to their meetings, and a distinguished Swedish lady traveler was refused admission on presenting herself at the doors. Now they freely admitted ladies to their meetings, and it was but a small step further to allow them to pay their subscriptions.

After some further discussion Lord Mayo consented to bring the matter before the society again at a meeting to be summoned in accordance with the regulations of the society.

The *Times* has printed some entertaining letters on the subject. The Hon. G. N. Curzon, M.P., who is a member of the Council, writes from the House of Commons to express his belief that the four good letters, F.R.G.S., will sink to a lower market value "if they are paraded by vagrant womanhood on visiting cards and in books."

One Fellow, evidently young and dangerously beautiful, declares that his family will not allow him to attend meetings open to women in their own right.

It appears, however, from a letter written by Admiral McClintock, that the objection is to the manner, rather than to the matter, of the action taken by the Council. After reciting the history of the innovation, the Admiral concludes :

Among the dissentient Fellows there are some who were ready to vote definitively against the admission of ladies, there were others ready to admit them with restriction as to sitting on the council, there were others who would receive them as Associate Fellows; but the one point upon which we were unanimous was the legal point of the action of the council having been *ultra vires*, and the absolute necessity of having the whole question submitted to a general meeting, so that what the Fellows generally wished might be done entirely and unquestionably under the provisions of the charter.

Had the dissentient Fellows been permitted at the special general meeting to state their views and their positions, which was not at all, as has been ignorantly assumed, against the election of ladies, provided that such elections were carried through under the provisions of the charter, all the heat, all the attribution of bad motives, all dispute would have been avoided, of the injurious effect of which upon any society no one can be more sensible than are the dissentient Fellows, whose only object has been that, in so important a question as a change in the constitution of the society, whatever is done should be done legally and in accord with the wishes of the entire body.

Some misapprehensions with regard to matters of fact are corrected by Mr. Douglas W. Freshfield, a member of the Council for fifteen years and for twelve years one of the honorary secretaries of the Royal

Geographical Society, in a letter to the *Times* of June 3. He says that the principle of the admission of ladies to the Society was not accepted in consequence of any recent incident. It was affirmed unanimously by the Council as long ago as 1887, and recognized again in 1890. Mr. Freshfield disposes of a good many so-called arguments against the admission of ladies by quoting the charter of the Society, according to which every "loving subject" of the Queen who desires to assist in promoting and promulgating geographical knowledge is a competent Fellow.

MEDALS DISTRIBUTED BY THE PARIS SOCIÉTÉ DE GÉOGRAPHIE.—The great gold medal of the Paris Geographical Society has been awarded to Commandant Monteil for his remarkable journey from Senegal to Tripoli by way of Lake Tchad in 1890-1892.

The other medals adjudged are: The Erhard gold medal, to Messrs. Cabrisy, Blanc and Petit, for relief maps; the Laroquette gold medal to Fridtjof Nansen, for the crossing of Greenland, 1888; the Léon Dewez gold medal to M. J. Dybowski, for his journey from Loango to the Shari river, 1891-1892; the Malte-Brun gold medal to M. C. Lenthéric, for his volume entitled *Le Rhône, Histoire d'un Fleuve*, 1892; the Alphonse de Montherot silver medal to M. A. A. Fauvel, for his work on the province of Shan-Tung; the Louise Bourbonnaud gold medal to M. Teisserenc de Bort, for his travels in the Sahara, 1883-1890; the Charles Grad silver medal to Count de Saint Saud, for his studies on the Pyrenees, 1877-1892; and the Pierre-Félix Fournier prize to M. G. Capus, for his travels in Central Asia and his work, *À travers le Royaume de Tamerlan*.

THE MEDALS OF THE BERLIN GESELLSCHAFT FÜR ERDKUNDE.—The Humboldt gold Medal of the Berlin Geographical Society has been bestowed this year upon Dr. John Murray, of the *Challenger* scientific staff.

Two African explorers, Dr. Franz Stuhlmann and Dr. Oskar Baumann, received at the same time the honor of the Karl Ritter Medal; the former for his ample and exact observations in Central Africa made in association with Emin Pasha; the latter for his remarkable journeys and explorations in the Congo State and the island of Fernando Po and in the lake regions of the continent.

MOUNTAIN RESERVOIRS IN ALSACE.—Under this heading the London *Times*, of May 15, publishes the following information, condensed from an article in the *Economiste Français*:

One of the first undertakings was to regulate the two lakes in the valley of Orbey, known as the Black Lake and the White Lake, these two now holding 3,000,000 cubic metres of water, so that the cotton and other factories in the valley of Orbey are now able to work all the year round, and there is a constant irrigation of the pastures. The total cost did not exceed £3,000, and the annual expenditure is only about £160. A second reservoir was constructed near Sewen, in the valley of Masseraux, not far from the celebrated mountain pass known as the Ballon d'Alsace. This reservoir, surrounded by a wall nearly 90 feet high, contains 1,100,000 cubic metres of water, and is considered such a fine piece of work that a relief plan of it has been sent to the Chicago Exhibition. In 1890 a reservoir was built at Allenweier, in order to regulate the waters of the Fecht, a torrent which has at various times done great damage; and this reservoir, together with three small lakes, also in the valley of Münster, holds about 2,000,000 cubic metres. The latest work, commenced last year, was the transformation of the Lauch, in the valley of Guebwiller, into an artificial lake large enough to hold the rain water which comes down from the surrounding heights and to store it until it is required. This reservoir will have an area of 28 acres and will hold 800,000 cubic metres of water, and, as it is fed by rain water from a surface of over 1,200 acres, as much as 3½ million of cubic metres will be collected in the course of the year—that is, when there is an average rainfall. The cost of construction is estimated at £43,250, of which all but £6,000, contributed by the town of Guebwiller

and the factory owners of the valley, is found by the State. The reservoir will be finished next year, and will provide motive power for 30 factories and irrigate 4,000 acres of pasture.

A SPECIAL POLITICAL MAP OF ITALY,* showing the civil, military and ecclesiastical divisions and subdivisions of the country, with explanatory text, has been published by the Istituto Cartografico Italiano of Rome.

It forms an atlas of 20 sheets, each about 20 inches square, drawn to a scale of 1:500,000, and colored with singular delicacy and good taste.

Notwithstanding the apparent limitations of the title, the map is useful for general reference, though it must be remembered that the longitudes are calculated from the meridian of Rome.

THE CORINTH CANAL.—The canal across the Isthmus of Corinth was to be formally opened at the end of June. The work was begun in 1882, one of many enterprises that followed in the wake of the Panama project. The canal unites the Gulf of Corinth with the Gulf of Ægina, and makes a true island of the Peloponnesus. It is 4 miles in length, 72 feet wide, and 26 feet in depth.

The British Consul at Patras in his last report says :

It will prove of great benefit to the various ports in the vicinity, for steamship companies trading with Constantinople, the Black Sea, Asia Minor, and the Ægean

* *Carta Politica Speciale del Regno d'Italia, colla Indicazione delle Circoscrizioni Amministrative (comprese quelle dei singoli Comuni) e delle Nuove Circoscrizioni dei Mandamenti e dei Collegi Elettorali e colle Tabelle di altre importanti Circoscrizioni Territoriali.*

Sulla Scala di 1:500,000.

Costruita e disegnata da G. E. Fritzsche su dati riveduti da L. Grimaldi Casta della Direzione Generale di Statistica.

Eseguita e pubblicata dall' Istituto Cartografico Italiano.

Prezzo L. 25.

Roma, 1893.

Archipelago have announced their intention of passing their steamers through the canal, and this will afford the passengers the satisfaction of a sail through the Gulf of Corinth and the Saronic Gulf, both of which are very beautiful and crowded with points of interest. Passengers landing at Patras can visit Olympia and rejoin their ship the next day. At Itea, in the Gulf of Salona, they are within a few hours' walk of the site of Delphi, where excavations are being carried on by the French Archæological School, and whence the ascent of Parnassus can easily be accomplished in the autumn and summer. At Corinth the site of the old town and Acrocorinth, whence a lovely view is obtained, may be visited in a few hours. Shipping generally will benefit by the opening of the canal, for the gulf and its approaches are at present very badly lighted, and it will be necessary, of course, to facilitate the passage of steamers at all seasons and hours, and to place lights at the various dangerous points.

SEVERE FROST AT HONGKONG.—Under this heading *Nature*, for April 6, 1893, publishes some correspondence on the cold weather experienced at Hongkong in January last. The latitude is $22^{\circ} 16' 30''$ N., and the mean temperature for the winter months is 66° Fahr.

January 15, the temperature fell at the Botanic Gardens, 350 feet above sea-level, to 39° , on the 16th to 35° , and on the 17th to 31° . At Canton, on the 16th, the thermometer stood at 25° . On the peninsula of Kowloon, opposite to Victoria, the cold seems to have been greater than at Hongkong; ice was seen on pools of water within fifty feet of sea-level and at the Kowloon Docks there was ice at the bottom of an empty dock. The rigging of ships in the harbor was coated with ice; and on Victoria Peak, 1818 feet above the sea, a casing of perfectly transparent solid ice, $5\frac{1}{2}$ inches in circumference, formed on the blades and bents of grass. This was on the windward side of the hill, but even on the lee side, the coating was about 3 inches in circumference. Evergreen shrubs and trees carried on their leaves solid coverings of ice $\frac{3}{8}$ of an inch in thickness. Many of the limbs snapped off under the

weight ; and the accumulation of ice broke down many of the telephone wires.

Many of the plants in the Gardens were injured and not a few were killed.

Mr. Thiselton-Dyer, of the Royal Gardens, Kew, makes the following remarks :

The importance of such facts as these in connection with geographical distribution can hardly be overrated. It is customary to compare the range of a plant with the corresponding mean annual temperature. But it is obvious that the exterminating effect of occasional low temperature must override every other condition. An island is often the last refuge of a species not found elsewhere. Such a frost as occurred in Hongkong would erase the Double Cocoa-nut in all probability from the face of creation, if it occurred in the Seychelles.* In any case islands are not easily restocked except with littoral vegetations and the trees distributed by carpophagous birds. It seems evident therefore that the geographical distribution of plants may still be influenced by causes which are catastrophic in their nature.

DELCOMMUNE'S EXPEDITION.—The following telegram supplements the information contained in those published in the BULLETIN for March, p. 167 :

LISBON, April 11, 1893.

. . . . The Luapula is the principal branch of the Congo. The Lualaba is an affluent; it enters the Luapula at Ankorro. The Lukuga joins the river below that point; as an outlet of the Tanganyika it has no importance, and it is not navigable. Lake Lanji does not exist. Crossed the Congo between Ankorro and the confluence with the Lukuga. Up stream as far as Lake Kassali, and beyond it, the river is completely open; down stream, there are some rapids. . . .—DELCOMMUNE.

According to *Le Mouvement Géographique*, M. Delcommune gave fuller details of his exploration at a meeting, held in Brussels, April 20. He said: "We have studied more than 300 kilomètres (186 miles) of the course of the Lomami previously unknown. We discovered Lake Kassali, and traced the Lufira river, which is interrupted by numerous rapids, and also the intricate course of the upper Lualaba with its impassa-

* Between 4° and 5°, S. Latitude.

ble rapids at Nzilo, where we abandoned the 27 boats which had cost us two months' toil. After a stay at Bunkeia, we pushed on to the Tanganika, passing by Lake Moero. We then solved the problem of the Lukuga, which is the outlet of the great African lake (Tanganika is meant), and settled the fact that Lake Lanji does not exist. We ascended the Congo as far as the junction of the two great streams, the Luapula and the Lualaba, and satisfied ourselves by several observations that the former, which passes through Lakes Bangweolo and Moero, is the true Congo. The Luapula is not navigable where it leaves the Moero, but the Congo, from a little below the Lukuga to the Lualaba above Lake Upemba, is navigable for a length of more than 400 kilomètres (250 miles).

The results are: "That the shortest and safest route to the Tanganika is not that from the eastern coast, but the one by way of the Congo, passing by Benalassambo, the terminus of steam navigation on the Sankuru. From this point a caravan would reach Albertville or Mpala, on the Tanganika, in 45 days.

"That a section of railway and a little work on the Lomami rapids would unite the Lomami and the Lualaba, which are separated at the proper point only by a distance of 80 kilomètres of level country.

"The regions traversed by the expedition were generally fertile, but unlike those of the upper and lower Congo in aspect, as well as in the flora and the fauna. In some places, such as Katanga, the population was sparse—the result of the slave trade—but on the Lukuga and the Lualaba, and in nearly all the vast territory of Baluba, it was of extraordinary density and

formed a vigorous and handsome race, secure in its strength against the raids of the slave hunters.

“This southern part of the Congo State, elevated as it is from 3000 to 5500 feet above the sea, enjoys an almost temperate climate, with a dry air and a constant breeze.”

THE MAISTRE EXPEDITION.—*The Bulletin du Comité de l'Afrique Française* for June contains M. Maistre's report of his march from Kemo on the Ubangi river northward to Bagirmi, thence westward along the course of the Benue to the Niger, which was followed to Akassa, where the great river enters the Gulf of Guinea.

The party consisted of: MM. Maistre, Brunache, Clozel, Briquez, de Béhagle and Bonnel de Maisières, an escort of 60 Senegalese, and 115 carriers; in all, 181 persons.

Kemo was left June 29, 1892. The tribes first encountered, the Togbos and the Ndris, were friendly, and treaties were made with the Ndri chiefs. Soon after leaving their country, the guides deserted, and the march was continued by the compass through an uninhabited region covered with a dense growth of tall grasses.

On the ninth day a Mandjia village was seen; but the Senegalese scouts were received, on approaching, with a flight of arrows and assagais from an enemy, hidden in the tall grass. The column pushed on to the village, where efforts were made to parley with the enemy, but in vain. The natives abandoned their huts, leaving abundant provisions behind them, and carrying

the report that the whites had come to make war on the Mandjia. This hostile feeling was encountered for a month. At Bogada, about 125 miles north of Kemo, the Mandjia came to a conference and peace was made. Guides were furnished and on the 2d of September the party reached the Gribingi river, one of the eastern branches of the Shari. Following the right bank of the Gribingi through a marshy country inhabited by the friendly Akunga tribe, the expedition came to the Aretu, a people whose language was wholly unknown to the interpreters. At Mandjatezze, about $8^{\circ} 39'$ N. Lat., the direction of the route was changed to the left toward the Sara country and Nachtigal's line of march, and for the next fifteen days difficulties of every sort multiplied.

The guides deserted, the food gave out, and the men had to live on the roots and the leaves. Weak as they were they had to keep on, sometimes up to the neck in the water of the swamps. At Kasinda, about 50 miles west of Mandjatezze, it was hoped that the men might rest; but the natives showed hostility, and the march was resumed. After five days Garenki was reached. This village is on an island in the Bahar-Sara, which M. Maistre supposes to be a southern arm, or rather an affluent, of the Shari. The language of the people (the Sara) was still unintelligible, but at Gako some Mussulmans from Bagirmi were met, who spoke Arabic, and M. Brunache was able to talk with them. One of these Mussulmans, Si-Saïd, was an envoy from Bagirmi to the Sara peoples and his friendship was of the greatest service to the expedition. On the 21st of November, after crossing a very dry country, in which

the only water was drawn from deep wells sunk in the sand, M. Maistre and his party arrived at Lai, the residence of the King of the Gaberi. This town, with a population of 10,000, is situated on the right bank of the Logone, or Ba-Baï river.

The strangers were coldly received at first, but the chief soon became friendly and signed a treaty with them, in the hope, it was found, of inducing them to join him in an attack upon his neighbors. For two days the Frenchmen were escorted by a force of 2000 warriors; but M. Maistre refused to assist them, and continued his route. He was at first kindly received at the next village, and then suddenly attacked. The village was burned to punish this treachery, and the line of march was changed for some days. The wide plains of the Sudan gave place to broad plateaux, which form the dividing line between the waters of the Lake Tchad basin and those of the Benue. Near Tune village, in Laka, M. Clozel fell sick and a long halt became necessary. This was in December, and the march had hardly been resumed when M. Maistre's illness interrupted it for two weeks.* Soon after the party was joined by

* The Europeans in the Maistre Expedition were no more than a working force, but their experience emphasizes Lieut. Morgen's argument in his manual for the Conduct of War and Expeditions in Africa. He says: "So far as the number of Europeans is concerned—I speak here, as I do farther on, rather of a political or exploring expedition sent out for a long time than of a military expedition organized for a brief period in order to inflict chastisement—it can never be small enough. This sounds absurd, but it is unquestionably right. An expedition is sufficiently provided with Europeans if its conduct is made secure under all circumstances. The more white men the more luggage, and the greater the burden on the commander. The Europeans sicken much more easily than the blacks and must be much more carefully tended. I cannot leave a sick European, at least not in West Africa with its poor communications, even in the care of a friendly chief. The whole expedition must wait till the sick man can be moved, and

a caravan of Fulbe merchants returning to Yola, which was reached without accident. At that place the agent of the Royal Niger Company furnished supplies and transportation to Akassa.

The route followed by M. Maistre cuts in two, as he says, the greatest blank space on the map of Africa.

He refers to a mountain mass in the Bolo country, eight days' march to the west of Amazaga, as the probable source of several rivers: the Tomi, an affluent of the Kemo, from the right, the Nana and the Bahar Sara, which flow to the north, the Ombela, an affluent of the Ubangi, and perhaps, also, some affluent of the Sanga. The Gribingi, previously unknown, has been carefully mapped for more than 60 miles, and M.

even then he must be carried by at least four men, who could be better employed. In a word, too many white men are no help, but a hindrance, to the expedition.

Was nun die Anzahl der Europäer betrifft, so kann dieselbe—ich spreche hier, wie im Folgenden mehr von einer auf längere Zeit ausgesandten politischen oder Forschungs-Expedition, als von der nur für kurze Zeit zusammengestellten militärischen Straf-Expedition—nie klein genug sein. Dies klingt absurd, aber ist ohne Frage richtig.

Wenn nur die Führung der Expedition unter allen Umständen gesichert ist, dann ist sie auch genügend mit Europäern besetzt. Je mehr Weisse, desto mehr Gepäcklasten, aber auch desto mehr andere Last erwächst dem Führer. Die Europäer erkanken leichter, als die Schwarzen, und müssen viel rücksichtsvoller behandelt werden. Den erkrankten Europäer kann ich nicht—wenigstens nicht in West-Afrika bei den schlechten Verbindungen—selbst bei einem befreundeten Häuptling, zur Pflege zurücklassen.

Die ganze Expedition muss warten, bis derselbe wieder transportfähig ist, und schliesslich gebraucht man zur Tragen des Kranken mindestens vier Leute, die besser zu verwenden wären. Kurz und gut, zu viel Weisse sind keine Unterstützung, sondern ein *impedimentum* der Expedition.

pp. 19-20, Kriegs-und Expeditionsführung in Afrika, von C. Morgen, Premier Lieutenant, a. l. s. d. 4. O/S Inf.-Reg. Nr. 63, Komm. zum Auswärtigen Amt. Berlin, 1893.

In Lieut. Morgen's opinion, three Europeans suffice for a party composed of 30 soldiers and 120 carriers.

Maistre believes it to be a branch of the Shari ; its course is nearly parallel with that of the Ba Mingi, a river mentioned by the natives, and the two meet a little to the north of Mandjatezze. M. Maistre is inclined to identify the Ba Mingi with Nachtigal's Bahr el Abiad, and the Gribingi with his Bahr el Azrek. (These Arab names, he notes, are unknown in the country). MM. Brunache and Briuez, who were with the Dybowski expedition, suggest that the Kukuru river crossed by that expedition may be the Gribingi.

The Bahar Sara, flowing from the south to the north, is identified with the Bahar Kuti of Nachtigal ; but M. Maistre, from information given by the natives, supposes that this river, instead of flowing from the east, is in its upper course almost parallel with the meridian, and has its source in about 6° N. Lat.

M. Maistre finds it impossible to speak with certainty concerning the communication between the Shari and the Logone, of which the natives made report to Barth and Nachtigal ; but he does not believe in its existence, "having little faith *à priori* in two rivers communicating with each other." The skepticism is reasonable, in spite of the Cassiquiari river; but M. Maistre quotes the statement of the natives that the Bahar Nam, a swamp which the expedition crossed at Gako, establishes a communication at times of flood between the Bahar Sara and the Logone by Bangul, to the south of Laï. He admits the possibility of a water passage at such times, but denies the river connexion.

Beyond the Logone the expedition determined the western limit of the Lake Tchad basin.

The information furnished by the natives went to

show that the Mayo Kebbi does not issue from the Tuburi marsh, as Barth was ready to admit ; and in this case there can be no communication between the Benue and the Logone.

At Palem the expedition touched the route followed by Nachtigal and so united the Congo with the regions of Northern Africa.

The tribes encountered were (going North and then West): the Togbos, comparatively unimportant ; the Ndris, a strong tribe, occupying a broad band of country parallel with the Ubangi ; the Mandjia, very numerous and much more powerful than the Ndris and, at the same time, suspicious and of low intelligence ; the Wia-Wia and the Awaka, both resembling the Mandjia, though more intelligent and more tractable ; the Akunga, on the right bank of the Gribingi where it turns abruptly to the north, a fine race, much superior mentally and physically to those already named ; the Aretu, in the country between the Ba Mingi and the Gribingi and on the left bank of the latter ; the great Sara tribe, whose country begins at Mandjatezze. Physically the Saras are the finest men M. Maistre had seen in Africa, with an average stature, according to measurement, of 1.78 metres (5 feet 10 inches). They are very warlike. Those settled farther north pay tribute to the king of Bagirmi, but the others have repelled all the attacks of the Mussulmans and preserve their independence. Next beyond the Saras are the Tummok, subject to Bagirmi, and apparently ruined by war. Palem and Gundi, important places in Nachtigal's day, are almost destroyed. The Gaberi occupy both banks of the Logone. They are excellent

horsemen and fighters, who have held their own against Bagirmi. Their chief town is Laï, on the right bank of the river. The tribes farther to the west are few and small, the most important being those of Laka, to the south of Tuburi and Lame.

EMIN PASHA.—The Brussels papers published at the end of May the following letter, written by the Arab Resident at Stanley Falls to his uncle Tipu Tip at Zanzibar :

“ Saïd-ben-Abed set out from Kirondo to meet between Unyoro and Wadelai one of his slaves named Kironga-Ronga, who had bought a great deal of ivory, when he encountered Emin Pasha, who was on the march against him.

They fought for two days; the third day Emin was defeated, and beat a retreat after losing a good many of his people. The fourth day Saïd-ben-Abed’s men went in pursuit of Emin and overtook him, and they fought again. Emin was taken and killed, with his whole force, and there can be none of his men remaining but those he may have left at Wadelai, or elsewhere.”

This letter is dated Dec. 3, 1892, and there is little reason to doubt its substantial correctness.

Ten years ago the rising in the Sudan cut off the communication between Emin Bey, then Governor of the Egyptian Equatorial Provinces, and the authorities at Cairo. For three years Emin was lost to the world, as if he were in another planet. Then came the news of his beleaguered position at Wadelai, the movement for his relief, the expedition of Stanley, the forced rescue, and the entrance of Emin into the German service and, with this, the general loss of interest in his career. Like Stanley, he seemed to have done his work, and men busied themselves with him no more; but his figure remains one of the most striking in the story of African adventure.

REMARKABLE RAINS.—Mr. Clement L. Wragge, Government Meteorologist of Queensland, writes to *Nature*, of May 4, some particulars of the extraordinary rainfall at Crohamhurst, on the western slope of Mont Blanc, a peak on a spur of the D'Aguilar Range, South Eastern Queensland.

The approximate latitude and longitude are : 26° 50 S. Lat., 152° 55' E. Long.

There fell at Crohamhurst for the 24 hours ending 9 A.M., February 1, 1893, 10.775 inches rain ; February 2, 20.056 inches ; February 3, 35.714 inches ; February 4, 10.760 inches.

Mr Wragge believes that the fall on the 3d of February "beats the world's record."

Mr. E. Douglas Archibald, in a communication to the same journal for May 25, recalls the fact that the heaviest known rainfall for 24 hours is that which occurred on the 14th of June, 1876, at Chirapunji, in the Khasia hills, Assam, when 40.8 inches fell ; and for the four days, June 12–15, there were 102 inches.

The *Imperial Gazetteer of India*, 2d. Ed., Vol. VIII, p. 179, says :

"The rainfall at Cherra Púnji is enormous. The average during the 25 years ending 1881 is returned at 489 inches ; and 805 inches are said to have fallen in 1861, including 366 inches in the single month of July. At Shillong, where the clouds rolling up from the plains of Bengal have already spent their force on three intervening ridges, the annual rainfall declines to an average of about 88 inches ; and at Jowái, which occupies an intermediate position, the average is 362 inches. The rainy season is confined to the five months from May to November."

A CROSSING OF AUSTRALIA.—*Nature*, of May 11, reports that Mr. Guy Boothby has lately crossed Australia from north to south, starting from Normanton, on the Gulf of Carpentaria, in March, 1892, and arriving at Adelaide about a year after. He travelled on horseback or in a wagon to Bourke, in South Australia, thence in a boat down the Darling and in a river steamer to Morgan, where he took the railway to Adelaide.

The feat is sufficiently rare to be worthy of record.

DISCOVERIES IN THE CHATHAM ISLANDS.—Mr. H. O. Forbes, in an article on The Chatham Islands and their Story (in the *Fortnightly Review* for May), mentions, among other discoveries made by him, the proof that there recently existed in these islands two birds, the nearest allies of which inhabited the Mascarene Islands within the historical period. These birds are a flightless rail allied to the Mauritius *Aphanapteryx*, and a coot which hardly differs from the extinct *Fulica Newtoni*.

The Chatham Islands lie about 400 miles east of New Zealand; the Mascarene Islands (Réunion, Mauritius, etc.) nearly 600 miles east of Madagascar. The groups are separated by more than twenty degrees of latitude and by 120 degrees of longitude; about the distance from London to San Francisco.

Mr. Forbes agrees with Prof. Newton in the belief that there was once a time when Rodriguez, Mauritius, Bourbon, Madagascar and the Seychelles were connected by dry land; and he argues from the existence of the birds discovered that the ancient land comprising New Zealand and its neighboring islands must have been united with the one far to the west-

ward. The connecting body is supposed to have been the Antarctic Continent ; and when the ice age came on the inhabitants must have migrated northwards.

In this way Mr. Forbes explains the appearance of the genus *Aphanapteryx* in regions so far apart as Mauritius and the Chatham Islands.

Mr. Alfred Russel Wallace writes to *Nature*, of May 11, to combat this "tremendous hypothesis" which is, he maintains, inadequate to explain the facts. Small, flightless birds, he says, must have been developed in or near to the islands where they are now found, since they could not have arisen on any extensive land inhabited by carnivorous mammals and reptiles, and could not long survive if introduced into such a country. Allied forms of ancestral flying birds could have reached the islands and there, owing to the total absence of terrestrial enemies and the abundance of food, developed into the allied flightless birds.

This explanation Mr. Wallace holds to be much more satisfactory than that which requires for a basis the supposition of enormous changes in physical geography.

Mr. Forbes replies to these objections in *Nature*, of May 25. He says that Mr. Wallace has himself pointed out that it requires a land connection to explain the presence of the flightless *Notornis* and *Ocydromus* in two groups of islands in the New Zealand region, for it has been hitherto considered an axiom of geographical distribution that the regions inhabited by the same genus or species have been continuous, or have been, at all events, such as to afford possibilities of migration from one to another. If *Aphanapteryx*

could have spread from the Chatham Islands to Mauritius by flight, *Notornis* and *Ocydromus* did not require a land connection to reach the nearer outlying islands from New Zealand, for they may equally have lost the use of their wings after they reached their present homes.

Mr. Forbes affirms that the world-wide distribution of the rails is due, not improbably, to habits which enable them to escape destruction. They live in reed and rush brakes, and the dense vegetation surrounding marshes, amid which pursuit is difficult or impossible. When in the Chatham Islands Mr. Forbes wished to secure a specimen of the *Ortygometra tabuensis*, which inhabits the dense rush-like vegetation of the upland districts of Warekawū. He succeeded only after two days' hard work, with the aid of a dog well trained to pursue this rail. Many birds were started, but they escaped, though none took wing. It is a question, however, whether the gigantic *Notornis* could have escaped under similar conditions.

Persistence in living under persecution depends largely, as Mr. Forbes says, on the numbers in which an animal is reproduced; and he holds to the theory that a land of extensive dimensions existed in the southern seas, in order to explain the distribution of plants and animals, *unknown on the northern side of the equator*, in regions so distant (from each other) as South America, Australia, New Zealand, and Lemuria (the ancient land of which Madagascar, Mauritius, Réunion, Rodriguez, and the Seychelles are the fragments).

THE ROYAL SOCIETY OF NEW SOUTH WALES.—*Original Researches.* The Royal Society of New South

Wales offers its Medal and £25 for the best communication (provided it be of sufficient merit) containing the results of original research or observation upon each of the following subjects:—

SERIES XII.—To be sent in not later than 1st May, 1893. No. 40.—Upon the Weapons, Utensils, and Manufactures of the Aborigines of Australia and Tasmania. No. 41.—On the Effect of the Australian Climate upon the Physical Development of the Australian-born Population. No. 42.—On the Injuries occasioned by Insect Pests upon Introduced Trees.

SERIES XIII.—To be sent in not later than 1st May, 1894. No. 43.—On the Timbers of New South Wales, with special reference to their fitness for use in construction, manufactures, and other similar purposes. No. 44.—On the Raised Sea-beaches and Kitchen Middens on the Coast of New South Wales. No. 45.—On the Aboriginal Rock Carvings and Paintings in New South Wales.

SERIES XIV.—To be sent in not later than 1st May, 1895. No. 46.—On the Silver Ore Deposits of New South Wales. No. 47.—On the physiological action of the poison of any Australian Snake, Spider or Tick. No. 48.—On the Chemistry of the Australian Gums and Resins.

The competition is in no way confined to Members of the Society, nor to residents in Australia, but is open to all without any restriction whatever, excepting that a Prize will not be awarded to a Member of the Council for the time being; neither will an award be made for a mere compilation, however meritorious in its way. The communication, to be successful, must be either

wholly or in part the result of original observation or research on the part of the Contributor.

The Society is fully sensible that the money value of the Prize will not repay an investigator for the expenditure of his time and labor, but it is hoped that the honor will be regarded as a sufficient inducement and reward.

The successful papers will be published in the Society's Annual Volume. Fifty reprint copies will be furnished to the Author free of expense.

Competitors are requested to write upon foolscap paper—on one side only. A motto must be used instead of the writer's name, and each paper must be accompanied by a sealed envelope bearing the motto outside, and containing the writer's name and address inside.

All communications to be addressed to the Honorary Secretaries.

F. B. KYNGDON,
T. P. ANDERSON STUART, } *Hon. Secs.*

THE SOCIETY'S HOUSE, 5 Elizabeth Street,
Sydney, 14th December, 1892.

AUSTRALASIAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.—This Association has been in existence since 1888, and has held four meetings; at Sydney in 1888, at Melbourne in 1890, at Christchurch in 1891, and at Hobart in 1892.

The next meeting will be at Adelaide, South Australia, September 25, 1893, and will continue for a week.

The Association prints a large proportion of the

papers presented at the meetings, in a volume containing about 600 pages. Each member receives a copy.

There will be excursions to places of interest, and other entertainments ; and the time of year fixed for the next meeting is most favorable for a visit to South Australia.

Communications should be addressed to the Hon. Secretaries, The University, Adelaide.